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RESEARCH ARTICLE



Moral luck and responsible innovation management

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ABSTRACT

The study discusses the three roles of normative assumption in the theory and practice of innovation management: (1) they define the value of innovation, (2) specify its luck, and (3) determine some goals and methodologies of managing the luck of innovations. The crucial questions of the investigation are as follows: *What does 'luck' mean in theories of innovation management?*, and *What is luck in the practice of innovation management?* The conceptual analyses present logical links which occur between the normative premises of some canonical theories of metaethics and definitions of luck. In the context of these analyses the study discusses some prerequisites for responsible decisions relating to innovations. The paper illustrates some ways of using philosophical methods in the theory of innovation management.

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Introduction

Normative assumptions specify a hierarchy of values and criteria of assessments. These premises guide political and economic decisions, yet find little analysis in economics where a neo-positivistic tendency led to a marginalisation of philosophical problems (MacRae 1973, 27). The study presents the three roles of normative assumption in theory and practice of innovation management as follows: (1) they define the value of innovation, (2) specify its luck, (3) and determine the goals and methodologies of managing the luck of innovations. This study aims to show how normative assumptions determine the idea of luck and the practice of managing luck of innovation. The present conceptual analysis will carve out the relationship between three kinds of concepts, which are as follows: (1) normative assumptions in some theories of metaethics (normative relativism, absolutism, egoism, universalism, utilitarianism, liberalism, personalism, eudemonism in their various versions), (2) conceptions of success, utility, and efficiency, and (3) definitions of the luck of innovations. This article underscores the importance of philosophical analyses in the theory and practice of innovation management and the roles which normative assumptions play in decision making regarding innovations. In

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the present paper, I do not embrace a particular value theory: The spectrum of normative assumptions will be taken into account without opting for any of them.

The present study discusses the typical moral issues of moral luck related to moral agency and responsibility only briefly, as there are already studies of these topics in the theory of innovation management (Grinbaum and Groves 2013; Moore 1999; Owen and Pansera 2019; Pavie 2014; Sand 2018b). Likewise, methodologies for predicting luck shall not be discussed in detail. The study takes up the primary task of specifying the role of normative assumptions in identifying, predicting and managing the luck of innovations. The key questions of this approach are as follows: *What does 'luck' mean in theories of innovation management? What is luck in the practice of innovation management?*

The problem and state of research

Varying definitions of luck can be found in the philosophy of innovation literature (Parnell and Dent 2009, 1002). In the present study, the term 'luck' designates an event and the function of activities which lead towards this event. Luck happens when an action and its doer is successful despite her limits of control over the success. In this context, the term 'success' has a broad meaning. It does not only refer to an increase in financial or other economic profits. It designates a totality of effects, which is highly appreciated by the agent or some other entities. Therefore, this conception of success depends on the value preferences of the person who states (evaluates) the consequences. According to this definition, the aim or purpose of the agent may have nothing to do with her success (successful results), because it can happen independently from her intentions.

'Luck' may also designate the function of actions which are successful despite the aforementioned limits of control. In the causal model of reality (where each event has its cause), one may explain this function by the chain of causes (causal relations, causal 'mechanisms') that have led the action towards its success despite the limits of agential control. Since the command over the success is gradual, luck may also have degrees – actions may need greater or lesser degrees of luck to become successful. Pure (maximal) luck takes place when the action is a success, yet the agent has had no control over it. If an agent has full control over the success of an action, it requires no luck to be successful (Collins and Hansen 2011, 8). The level of luck is proportional, and the level of control is inversely proportional to the degree of the limit of knowledge (epistemic limit) and agency (control limit). The constraints of knowledge (epistemic limits) are constitutive for luck when an action succeeds despite the lack of awareness of the agent, whereby at the moment of decision-making, the agent either does not have full knowledge about the causes or the nature of its future success (Rudy-Hiller 2018). In the former case, luck means that the agent does not have sufficient information about the means that may guarantee the future success of the action at hand. In the latter case, the agent succeeds in a different than intended manner. For example, John Pemberton did not anticipate that he would create a beverage (Coca-Cola) when he was working on a cure for a headache (Bodden 2019). Regarding agency (control limit), an action is lucky when the agent cannot fully control the causes which contribute to the success (Nagel 1979, 24–38). This aspect of luck comprises resultant, circumstantial, constitutive and causal luck, as specified by Thomas Nagel (1979). According to this definition of luck, an investment, change, or innovation is lucky when it is thriving despite the

aforementioned limits of knowledge and agency of their creators (for example, designers, investors, producers). This conception of luck is in line with the now classical notion of moral luck as defined by Nagel (1979) and Bernard Williams (1981). However, these thinkers deal with moral luck, which happens, when actions are morally right despite the limits of agential control. In this context, 'success' means moral success, which occurs when actions foster or promote values. The idea of moral success depends on normative assumptions, which specify those values (Zimmerman 2001, 2019). For example, the moral success (rightness) of an action is the utility of its consequences in the utilitarian perspective (Alchian 1953; Barbera, Hammond, and Seidl 1998); according to ethical personalism, the moral success of actions consists in respecting human dignity and freedom of individuals (Kelly 2005; Sen 1990; Williams and Bengtsson 2016). The opposite of moral success is moral failure (wrongness) of actions, which takes place when they disrespect or destroy intrinsic values. In this study, 'success' has a broader meaning, which embraces moral success but can also mean any highly appreciated consequences of the action.

One may distinguish good luck from bad luck (Nagel 1979, 25). Concerning innovations, 'good luck' is defined as above, and 'bad luck' means the failure of enterprises, which is a situation beyond the control of their 'key actors' (Collins and Hansen 2011, 8). In the present article, the term 'luck' without any adjective designates good luck. The study argues that distinguishing between good and bad luck requires adopting some normative assumptions.

We have, thus, specified luck in terms of the relations between the agent, causality and success. For example, 'subjective luck' designates the relationship between the agent and success. In this meaning, actions are lucky, when acts (perceptions, intentions, inclinations, emotions, decisions) of the agent lead towards success despite her inherent limits of control about it (Parnell and Dent 2009, 1005–1009). The notion of 'objective luck' may designate the relation between causality and (complete or partial) ignorance about it (Parnell and Dent 2009, 1002–1006). This kind of luck happens when the causes of success are not fully understood (Parnell and Dent 2009, 3). It can be the ignorance of the agent or some observers of her success at hand. 'Ignorance' may also designate gaps in scientific knowledge. In this case, 'luck' means that success does not have a scientific explanation. 'Luck' may also refer to the relationship between the success and its probability: In this meaning, innovations are lucky when they are thriving despite a high risk of failure (Navarro 2019; Yang 2019).

Success and luck are different things. Luck involves both success and a dose of uncertainty. Success accompanies luck because of their conceptual and conditional relations. Definitions of luck display their conceptual relation: Luck is specified in term of success. The idea of success is in the *definiens* of the definitions of luck because the success of innovations is a precondition for their luck (if assuming that there are no lucky innovations, which are not successful or unsuccessful innovations that are lucky). Innovation may be partially successful and partially unlucky (have bad luck) or partially lucky and partially unsuccessful when it attains some success, fails to attain some other success, and its creators cannot fully control these effects.

It is disputable, whether innovations are ever successful without a dose of luck, for there may be innovations which are so meticulously planned that they do not carry any significant dose of risk of failure and do not seem to require any luck to become

successful. However, due to our limits of knowledge and control over the future, every enterprise carries some risk. For example, oil-related investments were safe until the crisis in 2020, when, contrary to forecasts, oil prices fell sharply due to the unpredictable circumstance of the pandemic of 2020. Analogously, any innovation may become unsuccessful due to unpredictable or unpredicted circumstances, which may be very unlikely, but are possible. Because of human limits of knowledge and control about the future, innovations are considered risky by definition (Perrin 2002, 14). Only in an ideal situation (when the agent has perfect knowledge about and full control of the factors that cause the success) innovations need no luck to be successful. In reality, the success of innovations often or perhaps always requires some luck.

Some definitions specify innovation in terms of its success in attaining some goals. For example, innovation is as follows:

(D 1) ‘... the process of bringing something new into the world, through a combination of intellectual and practical ingenuity’. (Grinbaum and Groves 2013, 119)

(D 2) ‘... more than a new idea or an invention. An innovation requires implementation, either by being put into active use or by being made available for use by other parties, firms, individuals or organisations’. (OECD 2019, 44)

(D 3) ‘... something 1) new with [a] high-level of originality, 2) in whatever area 3) that also breaks into (or obtains a foothold in) society, often via the market, and 4) means something revolutionary for people.’ (Frankelius 2009, 49)

These definitions state prerequisites for calling an artefact ‘innovation’ or ‘innovative’ and they consider (a threshold of) success a condition that innovations satisfy, such as bringing something new into the world, implementation or obtaining a foothold in society. Such innovations may be unsuccessful in some other respect, for example, when they do not give revenue to the producer.¹

The aforementioned definitions are descriptive because they allow us to state that something is innovative without evaluating it. However, they would also comprise novelties that are (in a social perception or objective sense) useless or harmful. For example, some new illegal drugs may fulfil definitions 1–3. In order to exclude such novelties from the scope of the concept of innovation, some authors introduce the normative definitions by indicating values that innovations promote (in the various meanings of ‘value’ and ‘promote,’ which this study will discuss). For example, innovation is:

(D 4) ‘... a new or changed entity; realising or redistributing value ... Novelty and value are relative to and determined by the perception of the organisation and interested parties’. (IAIP n.d.)

(D 5) ‘turning an idea into a solution that adds value from a customer’s perspective’ (Skillicorn, Nick. ‘What Is Innovation? 15 Experts Share Their Innovation Definition’. *Idea to Value*. 18 March 2016. <https://www.ideatovalue.com/inno/nickskillicorn/2016/03/innovation-15-experts-share-innovation-definition/>)

(D 6) ‘... process of translating an idea or invention into a good or service that creates value for which customers will pay.’ (‘Innovation’ n.d.)

(D7) ‘... the process through which economic and social value is extracted from knowledge through the generation, development, and implementation ...’ (CBC 2019)

The function of protecting and promoting values is called their ‘utility’ in this text. According to the normative definitions, novelties that do not play this function are not innovations, even if they attain the goals, which the descriptive definitions indicate. Normative definitions specify the success of innovations in terms of their utility.

All the above definitions (D 1–7) specify innovations by pointing to some success. Therefore, luck plays a role in making innovations count as such: projects of innovation (often or always) require some external factors to become innovations, namely, luck, in order to attain the success specified in the definitions.

The definitions mentioned above do not exclude and partially overlap with each other. However, descriptive definitions (D 1–3) differ from normative definitions (D 4–7): The descriptive definitions do not indicate any value of innovations. Normative definitions specify them in terms of values.

Analogously, one can define the luck of innovations either in a value-neutral (descriptive) or moral (normative) way. In descriptive terms, lucky innovation takes place, when it effectively pursues goals set by someone (their creators, stakeholders, customers, a society, or someone else, who has the authority to decide on these goals) and its creators cannot fully control this function of innovation. The study discusses this idea of luck with the example of ethical egoism and utilitarianism in metaethics. In normative terms, lucky innovations protect and promote values despite the aforementioned limits of agential control. In this meaning of ‘luck’, innovation may not satisfy expectations of its creators, stakeholders or interested parties but be successful and lucky in terms of advocating values. Further sections discuss this idea of luck in the context of normative assumptions of ethical liberalism and eudaemonism in metaethics.

The normative definitions (D 4–7) are general – they require utility from innovations without specifying values and their nature. Their generality is their advantage, which allows acknowledgement of the success of innovations from various value preferences. However, in order to distinguish value-neutral goals from values (in these definitions), one needs to define them as distinct from other aims of human intentions. If the normative definitions do not presuppose any broader theory of value, they are open to contrasting interpretations, according to two counter normative assumptions of metaethics – normative relativism or absolutism (anti-relativism), which suggest divergent ideas of success and luck of innovations.

Normative relativism in metaethics is the assumption that something is or has value because someone (an individual, a group) appreciates it; there is no intrinsic value that is precious independently of human acts (intentions, appreciations, evaluations). In a relativistic theory, the term ‘value’ means the fact that someone appreciates something, and this word denotes the (intentional) object of this act (Brandt 1967; Garnett 1944; Gowans 2012; Westacott 2012; Zimmerman 2001, 2019). In the context of this assumption, normative definitions do not significantly differ from descriptive definitions of innovation concerning the idea of value: All of them specify innovations in terms of some success in attaining some goals, which may become values when someone (an individual or a group) intends or appreciates them. Contrary, according to the assumption of normative absolutism in metaethics, some values are intrinsic, in that they are precious regardless of the fact whether someone appreciates them (Brandt 1967; Garnett 1944; Gowans 2012; Westacott 2012; Zimmerman 2001, 2019). In this context, normative definitions of innovation specify the requirement of ethical success, which descriptive definitions do not

embrace: Innovations change the world for the better by protecting and promoting intrinsic values. Accordingly, 'luck' of innovations means their moral luck, as it relates to these values.

These two counter-assumptions (of normative relativism and absolutism) may affect identifying innovations. For example: *Are new methods of discrimination innovations according to D4?* To answer this question, one should answer the following question of metaethics: *Can value perceptions be wrong?* According to normative relativism, the answer to this question is negative. In this view, something may simultaneously be valuable and invaluable depending on the perceptions of the individuals and groups, who perceive it. Consequently, according to this assumption, a new method of discrimination may simultaneously be and not be innovation depending on value preferences of 'organisations' and 'interested parties,' which evaluate it.

On the contrary, according to the assumption of normative absolutism, some values are precious regardless of their perceptions. Therefore, 'organisations' and 'interested parties' may be wrong by appreciating something when it is not worth realising. Suppose the proponents of normative absolutism assume (the normative assumption) that the fundamental human rights are the principal good (which is more precious than any other goals of action). In that case, this premise leads to the conclusion that no methods of discrimination (which, by its definition, violates the rights) can be precious and anybody who appreciates them is wrong. Consequently, they cannot be innovations, according to D4.

Many advocates of normative relativism and anti-relativism in ethics accordingly accept that the idea of success is not value-neutral and success assessment requires some criteria which follow some orderly hierarchy of values and logically ordered normative assumptions (Brandt 1967; Brown 2008; Garnett 1944; Gowans 2012; Hollis and Lukes 1982; Jarvie 1983; Swoyer 2014; Westacott 2012). Some authors suggest abandoning value-neutral conception of success in economics and introduce an ethical idea of utility or efficiency which embraces values (Anderson 1995; Brown 2010; Coughlin 1991; Davila and Epstein 2014; Enderle and Murphy 2015; Fried, Knox Lovell, and Schmidt 2008; Hall and Winsten 1959; Hanekamp 2007; Mintzberg 1982; Minus 1993; Moran 2016; Segerstrom 1990; Segnestam Larsson and Brandsen 2016; Sen 1977, 1988, 1995; Stiglitz 2014; Walshe 2009; Wight 2017). In this view, 'success' and 'luck' may mean various things depending on the normative assumptions, which specify these values. This text presents a variety of theories of value to show how they determine the meaning of 'success,' and specify the idea of luck.

Authors varyingly specify relations between values and innovations. For example, according to the post-phenomenological approach of Peter-Paul Verbeek, technologies (including innovations) may have intrinsic value or disvalue when they are conducive to morally good or bad intentions and morally right or wrong actions (Verbeek 2011). The proponents of the humanistic approach indicate the intentional relations between innovations and values as follows: Innovations are morally neutral means of action (they have no intrinsic value), yet may relate to intrinsic values when utilised as instruments of human decisions and actions (Grinbaum and Groves 2013; Owen and Pansera 2019; Sand 2018b).

The requirement of success sets out the temporal limit of knowledge about the luck of innovations: It is possible to know the luck of past innovations in terms of their past

success and limits of control of their creators; it is not possible to anticipate with certainty the luck of future innovations (Lösch et al. 2019). Past-oriented (backwards-looking) approaches to innovations, e.g. the theory of innovation in the economic long-wave theories (Keklik 2018; Kleinknecht 1987; Mensch 1979; Schumpeter 1983; Walshe 2009) analyse the past innovations and their success. Future-oriented (forward-looking) approaches investigate serendipity (unintended inventions, discoveries or innovations), the responsibility of innovation managers for the future, the need to manage luck's impact and the role of ethics in the practice of forward-looking innovation management, set out with an acknowledgement of the limits of future knowledge (Dickel and Schrape 2017; Grinbaum and Groves 2013; Lösch, Heil, and Schneider 2017; Owen and Pansera 2019; Sand 2018a, 2018b).

Both past and future-oriented approaches to innovation face the problem of justifying the definition of success. The following question may express this problem: *What are the reasons to set goals, whose attainment is the success of innovations?* The proponents of past-oriented theories may answer that the definition of innovation is stipulative, while also specifying the subject matter of research, as well as being a research approach that does not require a justification. However, it is not the answer to the question in the future-oriented practice of innovation management, as it requires decisions about values that innovations should protect or advocate on a local or global scale. Consequently, the definition of success in those approaches is normative by default – it relates to values and requires specifying and justifying normative assumptions.

Post-phenomenological approaches attempt to justify normative assumptions by phenomenological analysis (Verbeek 2011). Some authors suggest justifying these premises by a social agreement (consensus) about ethical (Enderle and Murphy 2015; Moran 2016) and social (Bechtold, Capari, and Gudowsky 2017; Mintzberg 1982, 104; Stiglitz 2014) values with a particular concern for social responsibility (Carroll 2000; Grinbaum and Groves 2013; Melé 2008; Owen and Pansera 2019; Roa 2007; Schomberg and Hankins 2019), sustainability (Matsumoto et al. 2012; Raman et al. 2015) and ecology (Daly and Townsend 1996).

Although subject-related literature does not directly address the problem of the normative assumptions of the definition of innovation luck, many studies address problems of this nature in the theory and practice of innovation management. Some publications display how the meaning of 'innovation' changes, depending on the context of the philosophical assumptions of economics (Jonsson 2016; Keklik 2018). Some authors discuss the impact of some normative assumptions on the practice of innovation management (Bechtold, Capari, and Gudowsky 2017; MacRae 1973; Segnestam Larsson and Brandsen 2016). However, the problem usually appears in publications that do not directly deal with the subject of innovation. For instance, authors show the role of normative assumptions in economics (Anderson 1995; Baiman 2016; Brown 2010; Dennis 2012; Fleurbaey 2016; Piderit 1993; Sen 1988; White 2012) and management (Anderson 1997; Bernthal 1962; Eldred 2011; Freeman, Gilbert, and Hartman 1988; Pruzan 1998).

Some approaches illustrate the impact of normative assumptions to risk evaluation, and in this way, they indirectly introduce ethical questions about luck into the theory of decision and management (Brunk, Haworth, and Lee 2006; Ericson and Doyle 2003; Frenkel, Hommel, and Rudolf 2004; Haimes 2015; Keeney 1996; Kuipers 1994; Luetge and Jauernig 2013; Parsons 2001).

Some studies present the perspective of incorporating luck into strategic management (Collins and Hansen 2011; Parnell and Dent 2009). However, they do not discuss the impact of normative assumptions on the idea of luck and the strategies to manage it. Recently, discussions within the theory of innovation have triggered studies referring to the paradox of moral responsibility for innovation in situations where its creator does not have full control over its success and effects (Grinbaum and Groves 2013; Moore 1999; Owen and Pansera 2019; Pavie 2014; Sand 2018b, 2020a, 2020b; Sand and Jongsma 2020).

The terminology: ‘value preferences,’ ‘normative assumptions,’ and ‘utility’

In the present paper, the term ‘hierarchy of values’ signifies value-preferences (Hansson and Grüne-Yanoff 2018). They are decisions, attitudes, and inclinations of preferring something over something else or ranking it higher. Normative assumptions conceptualise (define) value preferences by articulating the hierarchy of values, by specifying the nature of the principal (the most precious) good (value) and (conditional or intentional) relations between this good and the remaining goods (values). Normative assumptions are conceptions. They are not value preferences which are facts (of human decisions and attitudes). Normative assumptions may specify value preferences in two ways. They may conceptualise the existing value preferences (of an individual or a group) or specify a pattern of expected (right, good, moral) value preferences which should take place. For example, organisations may manage their organisational culture and the value preferences of their members by setting normative assumptions in their ‘mission,’ ‘vision’ or ‘ethical code’ (Cunningham and de Quidt 2016; Segnestam Larsson and Brandsen 2016).

In this paper, the terms ‘utility’ and ‘profit’ mean the instrumental value of innovations: They are useful (have the value of utility) or profitable when they provide more benefits than losses. Further analyses distinguish profit from the utility (stipulative distinction). A profit is a proportion between the benefits and losses of one type (for example, financial) and for a specified entity (individual, group, organisation). The term ‘utility’ means that in all relevant aspects the sum of benefits is greater than the sum of losses.

The term ‘utility’ alludes to the consequentialist ethics of utilitarianism (Driver 2014; Marseille and Kahn 2019; Witztum and Young 2013). In economics, the value of utility may have the name of ‘efficiency’ (Mintzberg 1982). Ethical theories specify the relevant aspects of utility assessment by answering to the following questions: *Whose profits and losses are relevant for the utility accruing from innovations? What do the benefits and losses involve? What are the proper methods of predicting the future utility of innovations?* The following three sections discuss these questions. Answers to these questions, as shown below, determine divergent conceptions of luck.

The bearers of utility

Within organisations, the utility (or efficiency) assessment measurements usually refer to an organisation or its business and operational units. However, it may also be for other

entities. A different one may be the utility accruing from innovations for their creators, for the organisation that avails of it, as well as its investors, stakeholders, customers and society itself. Therefore, to specify the utility of innovations, it is necessary to answer the following question: *Whose profits and losses are relevant for the utility accruing from innovations?* The answers to this question are normative because they select people whose well-being should be advocated. The following positions are mutually exclusive: *I, my group* (ethical egoism) or *every person* (ethical universalism).

According to theories of ethical egoism, the action is useful (efficient, morally right, successful), when it produces results that maximise the interests of an individual (a person, organisation) or a group, even at the expense of others (Shaver 2019). In this view, success and luck are relative to the interests and preferences of some individual or group, e.g. for the creators of innovation, its users, investors or other parties: innovation is successful for someone when it is profitable for this person; it is lucky when its creators do not have full control over this profit.

Moderate ('enlightened') theories of ethical egoism (such as the 'invisible hand'-theory of Adam Smith) suggest that decisions of a rational egoist result in socially useful activities as pursuing one's self-interest in the long run term 'automatically' furthers the interests of others. This stance inspired some representatives of utilitarianism to abandon ethical egoism and substitute it with the normative assumption of ethical universalism, which is now associated with utilitarianism. It is

the position that ... an act or rule of action is right if and only if it is, or probably is, conducive to at least as great a balance of good over evil in the universe as a whole than an alternative would be ... (Frankena 1973, 15–16)

For example, some practices of 'corporate social responsibility' (Melé 2008), 'sustainable development' (Matsumoto et al. 2012) follow the assumption of utilitarianism and the Kaldor-Hicks efficiency test translates this into the methodology of economics. In this notion of utility, innovation is successful when it is conducive to 'the greatest possible balance of good over evil in the universe', whereas innovation is lucky when it fulfils this task despite its creators' limits of control over this function of innovation.

Some authors supplement ethical universalism with some additional normative (deontological, absolutist) assumptions about a principal good, which is to be unconditionally respected, because it is more precious than other goods, regardless of their quantity. For instance, social liberalism in metaethics is the assumption that the principal good is the freedom of the individuals, and utility of changes is in their promotion of this good (Kelly 2005). Aristotle identifies the principal good with human development – the fulfilment (eudaimonia, εὐδαιμονία in Greek) of the most precious possibilities of humans. The theories relating to his eudemonism define utility in terms of the well-being (eudemonia) of individuals (Brink 2014; Crisp 2016; Kraut 2016). These exemplary anti-egoistic concepts have set some general standards, which innovations should meet. According to them, innovations are not successful and therefore, cannot be lucky when they violate the principal good. This notion of utility requires a multi-criteria of utility evaluation, which the following sections will discuss (Anderson 1995, 190–192; Fleurbaey 2016; Frankena 1973; Piderit 1993, 284–286; Shaver 2019).

Human needs and luck of satisfying them

One may define the success of innovations in terms of human needs as follows: Innovations are successful when they conduce to the satisfaction of human needs. According to this definition, an innovation is lucky when it plays this role, and its creators do not have full control over this function. One may specify this definition according to the positions of either ethical egoism, universalism or normative absolutism in metaethics, as specified in the previous sections.

Philosophical theories propose two contrasting answers to the following question: *Is every need worth satisfying?* According to normative relativism, each need of individuals is worth satisfying, if they appreciate it. This stance has multiple variants. For instance, under the individualist and decisionistic version of normative relativism, the needs of people are the products of their decisions. Jean-Paul Sartre in the first period of his works (in *Being and Nothingness*) presents this stance. In his notion, every decision has an aim; its achievement is a human need (Anderson 2002; Flynn 2013; Heter 2006, 75–117). Therefore, in this view, successful innovations satisfy needs, which individuals appreciate; whereas innovations are lucky when their creators do not have full control over this success.

In the view of normative absolutism, not every need is worth satisfying. For example, Aristotle distinguished real needs from apparent needs. The fulfilment of real needs is conducive to the eudaemonia – they are worth satisfying. There are also apparent (delusional, illusory) needs, whose fulfilment does not serve human development. If satisfying them destroys the eudaemonia of the agent or someone else, they are not worth satisfying (Jayapalan 1999; Kraut 2016; Veatch 2003). In this context, one may define the success and luck of innovation as follows: successful innovation satisfies needs that are worth satisfying; innovations are lucky when their creators do not have full control over this success.

The stances mentioned above (normative relativism and anti-relativism) may have an impact on the manner of identifying the luck of innovations. Consider the following example: A producer creates a new refreshing drink. However, the product is unexpectedly and unforeseen by the producer addictive. Consumers were informed about the addiction risk, and the product brings revenue to the firm.

According to normative relativism, this product is a successful innovation as it is new and satisfies the needs of clients. The addictive function of the product is its good luck, as it increases the demand for this product. The addiction is not bad luck for the consumers, because when they decide to become addicted, it is their new ‘need’. On the contrary, for example, in the context of the theory of eudemonism, this product cannot be lucky as it evokes addiction, which restricts the eudaimonia (Blecker et al. 2006; Donohue 2006). In this view, the addictive function of this product is a matter of its bad luck for the customers.

Managing luck of innovations

By ‘luck management’ or ‘managing luck of innovations’ I mean the methodologies and practices which aim at increasing the chances of success for innovations and decreasing their risks (risk of their failure and other risks). As this section argues, the normative assumptions may divergently specify the goals, methods and moral boundaries of luck management.

If normative assumptions may divergently specify success of innovations, they can indicate various aims of managing luck of innovations. For example, according to ethical egoism, individuals and groups follow their interests in setting these goals. Theories of normative relativism may indicate various groups that should decide about these aims. For example, 'the organisation and interested parties' (D 4) or 'customers' (D 5) can determine the value, which innovation should promote. Consequently, their value preferences decide the aims of innovation management. The assumption of normative absolutism does not alter such aims but (as the previous sections of this study argue), it does set some additional requirements: Firstly, innovation management should give primacy to satisfying real needs over apparent needs. Secondly, innovation management should not aim at satisfying the (apparent) needs, in which satisfaction destroys the principal good (which theories of absolutism variously define). Thirdly, this position usually excludes ethical egoism and requires considering the interests of all people.

Decisions of luck management require knowledge about the chances and risks of innovation. As some authors notice, predictions are ethically neutral when they relate to the possibility of facts. However, if the forecast relates to values (when it is about their probability), it ceases to be value-neutral. To identify probability, one should evaluate it by distinguishing more precious goals and possibilities from less precious goals and possibilities (Anderson 1995; Brown 2010; Coughlin 1991; Davila and Epstein 2014; Enderle and Murphy 2015; Fried, Knox Lovell, and Schmidt 2008; Hall and Winsten 1959; Hanekamp 2007; Mintzberg 1982; Minus 1993; Moran 2016; Segerstrom 1990; Segnestam Larsson and Brandsen 2016; Sen 1977, 1988, 1995; Stiglitz 2014; Walshe 2009; Wight 2017; Zhou 2005). As some conceptions of idealised design and risk management suggest (Ackoff, Magidson, and Addison 2006; Ericson and Doyle 2003; Frenkel, Hommel, and Rudolf 2004), the value of chances and risks is the proportion between the likelihood of a possibility and the rank of values it can undermine or foster. I call this proportion 'the principle of moral luck'. According to this principle, the higher the value is, the chance of its realisation is more precious; whereas, the lower the value is, the risk of its destruction is more permissible than the risk of destroying the higher value; whereby the low chances of promoting the higher value may be the same or more precious than the high chances of promoting a lower value. The principle of moral luck may justify taking a high risk of annihilating lower values for a small chance of protecting some high value. For example, internet technologies and a multitude of other innovations originate from military research in the United States. Had this endeavours not been driven by a stark interest in national security, work on these innovations might have been abandoned due to the high costs and risk of failure. Therefore, normative assumptions play a vital role in analysing opportunities and risks, which is a vital part of luck management and the principle of moral luck guides some processes of selecting the projects of innovations to be financed and implemented.

Normative assumptions may also specify some moral boundaries of managing luck by advertising campaigns, which increase the demand on the market for an innovative product or service (Barnes, Blake, and Pinder 2009). According to pure normative relativism (without any additional deontological assumptions), there is nothing wrong with persuasion which alters the preferences of customers by modifying and creating their needs and value preferences. Subsequently, their new preferences acquire the term of 'needs', and purchasing decisions are called 'fulfilment of needs'. In the context of

absolutism, the permissibility of such persuasion is conditional. It is morally acceptable if it does not lead to the destruction of the principal good, such as the development of an individual (eudaemonia); otherwise, the persuasion turns into a morally wrong manipulation, according to the theories of eudemonism (Blecker et al. 2006; Donohue 2006).

Likewise, some representatives of normative relativism present a critique of manipulation. For example, Sartre (especially in the later period of his works) distinguished authentic needs from illusory needs. Non-authentic needs are the products of manipulation, which is morally wrong. However, to evaluate manipulation, he adopts the deontological (absolutist) assumption that freedom of individuals is the intrinsic and principal good (Anderson 2002).

Moral responsibility for luck and the principle of control

The problem of moral luck is discussed in the literature as a challenge for our understanding of moral responsibility. Moral luck suggests, for instance, that the consequences of actions can taint the moral status (viz. moral responsibility) of the perpetrator despite having been beyond her control. Thus, someone can become worthy of praise, criticism, reward or punishment for consequences of her actions (Athanasoulis 2005; Nagel 1979; Nelkin 2019; Williams 1981). This kind of responsibility may relate to moral values (of moral rightness or wrongness). This concern for moral responsibility can also be identified in realms that are not straightforwardly moral such as innovation, for example, when innovators are praised for innovation successes.

Modern philosophers, who discuss the problem of moral luck – Thomas Nagel and Bernard Williams – assume a close and intuitive connection between moral responsibility and control, standardly characterised as follows: ‘We are morally assessable only to the extent that what we are assessed for depends on factors under our control’ (Nelkin 2019). This control principle specifies the strict and intuitive meaning of ‘moral responsibility’ but also suggests the existence of a paradox: Agents should be assessed only for things within their control, but they are factually judged, for instance, for the consequences of actions that were beyond their control (Nagel 1979, 34; Sand and Jongsma 2020). The same paradox seems to emerge in the non-moral realm – one can question, whether innovators are morally responsible (praiseworthy) for the success, when it was beyond their control (Grinbaum and Groves 2013; Moore 1999; Owen and Pansera 2019; Pavie 2014; Sand 2018b, 2020a, 2020b; Sand and Jongsma 2020).

Some authors attempt to solve the aforementioned paradox by rejecting the control principle (Browne 1992) or showing that one can explain moral luck without assuming the control principle (Walker 1991). They assume that agents can be morally responsible despite total lack of control and intent, for example, in the cases of *quasi*-parental or collective responsibility (Grinbaum and Groves 2013). *Quasi*-parental responsibility for technological development consists of the obligation to care for someone or something (Grinbaum and Groves 2013, 130–132). In this meaning of ‘responsibility’ innovators are responsible for their innovations like parents for their children. This responsibility is the ‘duty,’ or ‘virtue’ (Grinbaum and Groves 2013, 131). It is not moral responsibility in the aforementioned strict sense, although the *quasi*-parental responsibility may flow from this moral responsibility.

Similarly in the case, of collective responsibility, one has to do with the situation, where the guilt of some members of the group is ‘attributed to [all] individuals who compose the group’ (Grinbaum and Groves 2013, 133). In this context the term ‘responsibility’ means ‘political responsibility’ (Grinbaum and Groves 2013, 133). It can designate various phenomena, like (a) feeling of pride or shame for actions of other members of the group, (b) the obligation to help those who have suffered as a result of the group’s injustice or (c) the obligation to reimburse the harms caused by the injustice of the group (Grinbaum and Groves 2013, 132–134). Accordingly, all members of a group may have some collective responsibilities, which may follow from the actions of some other member. However, these responsibilities may be distinct phenomena from moral responsibility in the strict sense: someone can have some responsibility without being guilty or praiseworthy for the reason of this responsibility.

Another way towards a solution of this problem demands a stronger adherence to the principle (Fischer and Ravizza 1998; Latus 2000; Nelkin 2019; Richards 1986; Wolf 2001): Even if it barely happens, one *should* not praise or blame agents for consequences which they did not control. Furthermore, if an agent partially controlled an event, then she might also be partially responsible for it. Indeed, the principle of control suggests that control and responsibility may be gradual. Namely, moral responsibility for the consequences is proportional to the level of agential control and inversely proportional to the agent’s epistemic (Rudy-Hiller 2018) and control (Nagel 1979, 24–38) limits over the consequences. These are the same limits which are constitutive to luck, and this study has already indicated them. Thus, they may decrease the level, but they do not always absolve decision-makers from their moral responsibility for the consequences of their actions. Consequently, according to the principle, only the agent who had absolutely no control over the consequences of the action, for example, when one invents or discovers something by pure luck, is exempt from morally responsible. However, concerning innovations, pure luck is rare because innovators are not without tools to influence the future, investigate possibilities and their probability. For example, they may test an innovation, analyse its risks and opportunities by statistical and mathematical methods (Zimmer-Merkle and Fleischer 2017).

Moreover, agents (people or organisations) may be morally responsible for their lack of awareness when they do not attain available knowledge about the opportunities and risks of action (Rudy-Hiller 2018). Such are cases of wilful ignorance. For example, when a pharmaceutical company launches a medication without testing its effects properly, the lack of awareness does not absolve the producers from moral responsibility for the failure or harmful effects of the product. In this case, the company could have some control over the effects but abstains from controlling them.

In the context of discussions about the doctrine of double effect, some authors distinguish between direct and indirect intentions and control, which are the condition for moral responsibility (Anscombe 1982; Dworkin 1990; Hills 2003; McIntyre 2014). The discussion alludes to the observation (of Thomas Aquinas and the medieval scholastics) that the aim of (intended by) the agent (lat. *finis operantis*) can differ from the goal of actions (lat. *finis operis*), which is determined by the causal ‘inner mechanism’ of activities. According to this distinction, one directly intends some consequence by trying to cause it and wishing it to happen. The agent indirectly intends (wills) some consequences (without directly intending them), by planning and conducting the action that causes

them by its ‘inner mechanism’ which is or can be known to the agent. In this case, the agent can have some indirect control over the consequences of her action by controlling its ‘inner mechanism,’ however, without directly intending them (Anscombe 1982; Dworkin 1990; Hills 2003; McIntyre 2014). There may be many ways of indirectly intending a consequence. For example, the idea of indirect willing and control may explain cases of *quasi*-parental and collective moral responsibility – when agents who bear it, have some indirect control over the situation or indirectly will it. Parents can be morally (not only legally) responsible for the misbehaviour of their child when they could have prevented it or have contributed to the fault by making mistakes in the upbringing of children like encouraging them to unethical behaviour. Parents may have no such control in each moment, but when they sometimes have it, and it is sufficient to influence decisions of the child, they may be (partially) morally responsible for the misbehaviour. Similarly, members of a group may carry the collective moral responsibility for the injustice, which is not their fault, when they indirectly intend it. For example, an agent can be responsible for the injustice of other people, when she profits from this injustice and refuses to give back its benefits to its victims. Alexei Grinbaum and Christopher Groves seem to imply the idea of indirect willing by summing up the position of Hannah Arendt about the collective responsibility in the following way: ‘She did not ask whether an individual is good but whether his or her conduct is good for the world s/he lives in’ (2013, 132).

Another example: The agent may indirectly intend some consequence by intending some kind of consequence without **precisely** anticipating the eventual guise and shape of that consequence. Alexander Fleming, for instance, had previously observed antiseptic agents and was on the lookout for similar agents: While one cannot say that he intended to find Penicillin, he certainly intended to find a chemical agent with similar properties (Gillies 2015). Thus, the discovery of Penicillin was not purely accidental, although it involved an enormous degree of luck (Sand 2020b). Thus, researchers might pursue finding structurally similar phenomena to those eventually found and be morally responsible for the success or failure, as they controlled the direction and manner of the investigation.

Responsibility and ethics

According to the principle of moral luck, innovation managers should select ideas and solutions, which have sufficient opportunity to protect and promote values, and which are high enough to make the investment worthy of its costs and risks. To decide to undertake the costs and risks of solving the problem, one should first evaluate its importance. This evaluation is the preliminary step of managing the luck of innovation. By assessing the importance of a problem, one addresses some hierarchy of values and normative assumptions. If the problem is worth solving, one may investigate the chances and risks of its possible solutions, according to the principle of moral luck. When normative assumptions are arbitrary, they pose a threat to the organisation and society as a whole, because they may lead towards the arbitrary underestimation or overestimation of opportunities and risks (Jacko 2016; Mintzberg 1982). For instance, the ‘innovation paradox’ takes place when large organisations overestimate their *status quo*. By consequence, they marginalise the chances of revolutionary innovations, or abandon them

and prefer less risky evolutionary innovations (Davila and Epstein 2014) or pseudo-innovations (Mensch 1979). Organisations need the appropriate hierarchy of values to evaluate opportunities and risks.

Normative assumptions are not conclusions of reasoning; they are its premises. They do not have scientific proof. Nevertheless, they do not need to be arbitrary. One may choose normative assumptions in a more or less responsible manner in terms of methodological rationality, as the former section indicates. One may investigate them by philosophical methods concerning the consistency of these assumptions (Dorsey 2006), their compatibility with experience (Chappell 2009) and in terms of the conditions for rational choice between normative assumptions (Jacko 2018; Kant 2010; Kotarbiński 1958).

Since normative assumptions play a crucial role in responsible decision-making about innovations and philosophical methods are best suited to examine these premises, philosophical research may go with the theory and practice of innovation management in three respects. Firstly, philosophical ethics offers some methods to investigate the justification of normative assumptions. It does not offer scientific proof, but it facilitates the partial justification by employing the phenomenological and logical analysis of the (internal and external) consistency of normative assumptions. It may also falsify some systems of normative assumptions by detecting its (formal or material) incongruity. Secondly, ethics may operationalise normative assumptions by specifying their impact on practice. Thirdly, analytical methods of philosophy investigate a variety of normative assumptions. In this way, ethics can fulfil a heuristic role in specifying a multi-faceted perspective of perceiving values and facilitating the observation of problems and their solutions in a broader ('humanistic') perspective, not only in quantitative terms or possibilities of some particular profit. In this way, ethics may present a range of possible options when establishing a social consensus on the values, which may guide innovation management (Coughlin 1991; Cowan and Rizzo 1995; Gustafson and Johnson 1989; Piderit 1993; Pruzan 1998; Segerstrom 1990; Wight 2015; Zsolnai 2002).

Conclusions

The study presented a spectrum of answers to its key questions (*What does 'luck' mean in theories of innovation management?*, *What is luck in the practice of innovation management?*). Possible answers have been outlined based on the assumptions of various normative theories including normative relativism, anti-relativism in metaethics, ethical egoism, universalism, personalism, liberalism, utilitarianism and eudemonism. The conceptual analyses showed how these premises specify the idea of the success of innovations in terms of their utility and efficiency. The present analyses uncovered the relation between the idea of success and the definition of luck and how normative assumptions affect its meaning. The study argued that the value-neutral (economic, descriptive) conceptions of success, utility, efficiency and luck are general and open for various interpretations. Conceptualisations become ethically relevant when guiding decisions relating to innovations. The analyses demonstrated the heuristic role of normative assumptions – they elucidate qualitative aspects of changes and their value. The study outlined how normative assumptions determine the goals and moral limits of managing the luck of innovations, while also the method to identify innovations and manage their luck. Lastly, I presented the role of philosophical investigations for selecting normative assumptions.

The study opens a perspective for further research of the roles that normative assumptions come to play in the theory of innovation management and for empirical investigations about the impact of value preferences on decisions concerning the financing and implementation of innovations or their projects.

Note

1. Some thinkers do not explicitly specify innovations in terms of success. For example, Joseph A. Schumpeter (1983, 65–95) writes about ‘new combination’ of new or existing knowledge, resources, equipment, and other factors. However, in the context of his theory of ‘economic waves,’ this kind of novelty may get some interpretation in terms of success: An innovation (as opposed to pseudo-innovations) becomes successful when it contributes to the technical or economic development (Keklik 2018; Kleinknecht 1987; Mensch 1979; Walshe 2009).

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